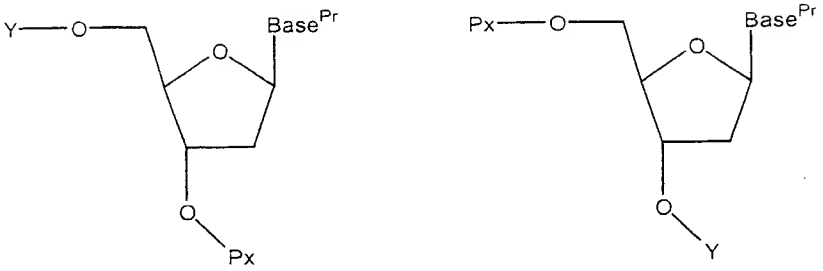
**Figure 1A**




Px = phosphoramidite, H-phosphonate or phosphate

Y = one of the general structures in Figures 1B-1I ($R_1$ = -H, alkyl or aryl):

**Figure 1B**

o-nitrobenzylthioethyloxycarbonyl (NBTEOC)

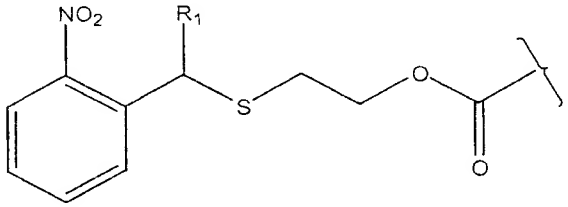
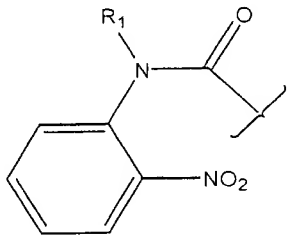


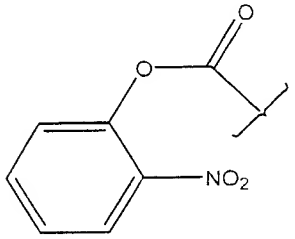

**Figure 1C**

o-nitrophenylaminocarbonyl (NPAC)



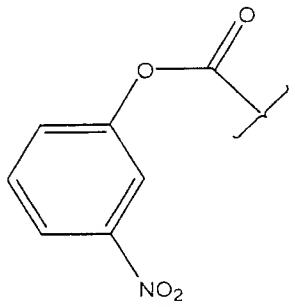
## Figure 1D

o-nitrophenoxycarbonyl (N2POC)



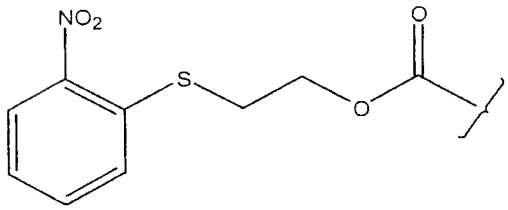

## Figure 1E

m-nitrophenoxycarbonyl (N3POC)



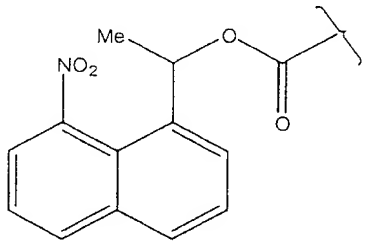

## Figure 1F

o-nitrophenylthioethyloxycarbonyl



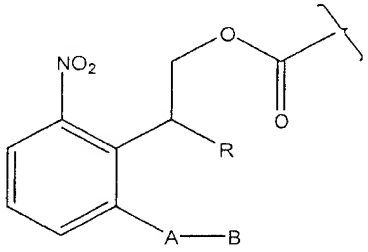
## Figure 1G

α-methyl-8-nitronaphthylmethoxycarbonyl (MeNMOC)




## Figure 1H

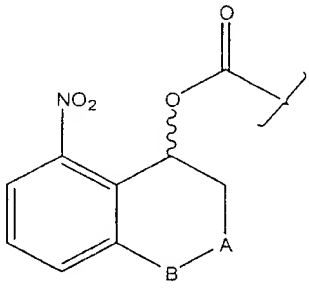
6-substituted 2-(o-nitrophenyl)-2-propyloxycarbonyl (6NPPOC)




A = O, S, N-alkyl, N-aryl, $(CH_2)_n$, where n = 0 to about 3
B = aprotic weakly basic group (e.g., N-alkylimidazole)

## Figure 1I

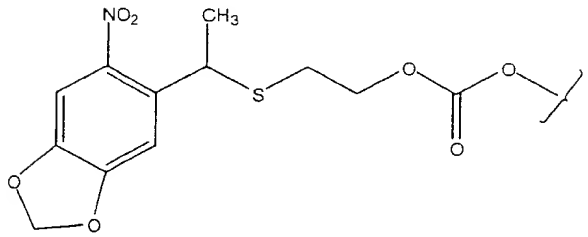
cyclic o-nitrobenzyloxycarbonyl



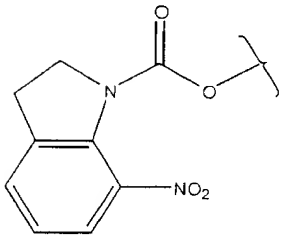

A = O, S, N-alkyl, N-aryl, $(CH_2)_n$, where n = 0 to about 3
B = aprotic weakly basic group (e.g., N-alkylimidazole)

**Figure 2A**

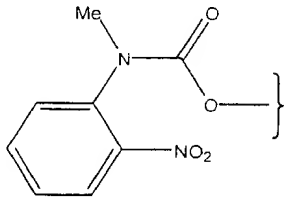
TEMPOC



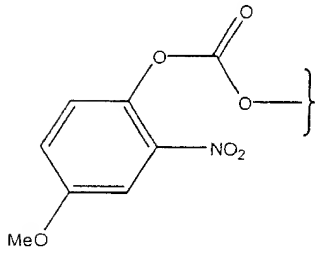
NIOC



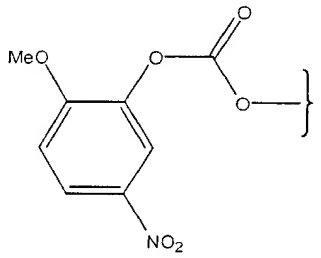
NAMOC



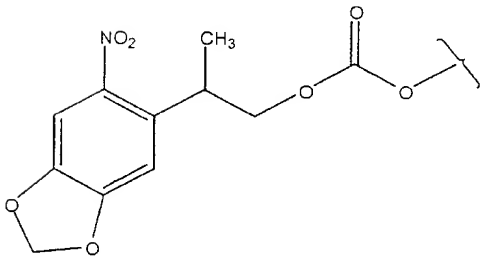
MeN2POC



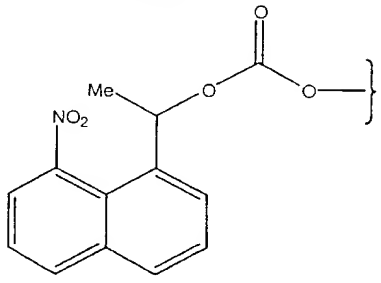
MeN3POC



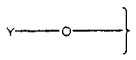
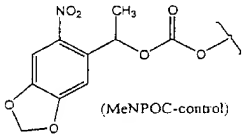
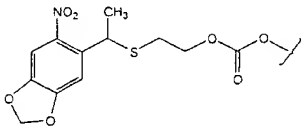
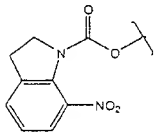
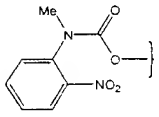
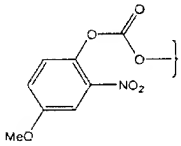
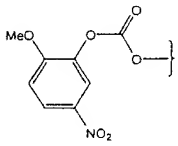
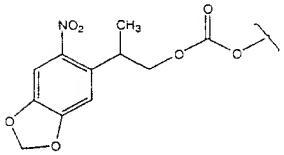
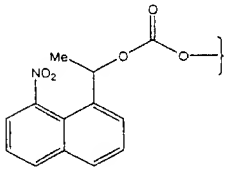
NP2POC



NNEOC

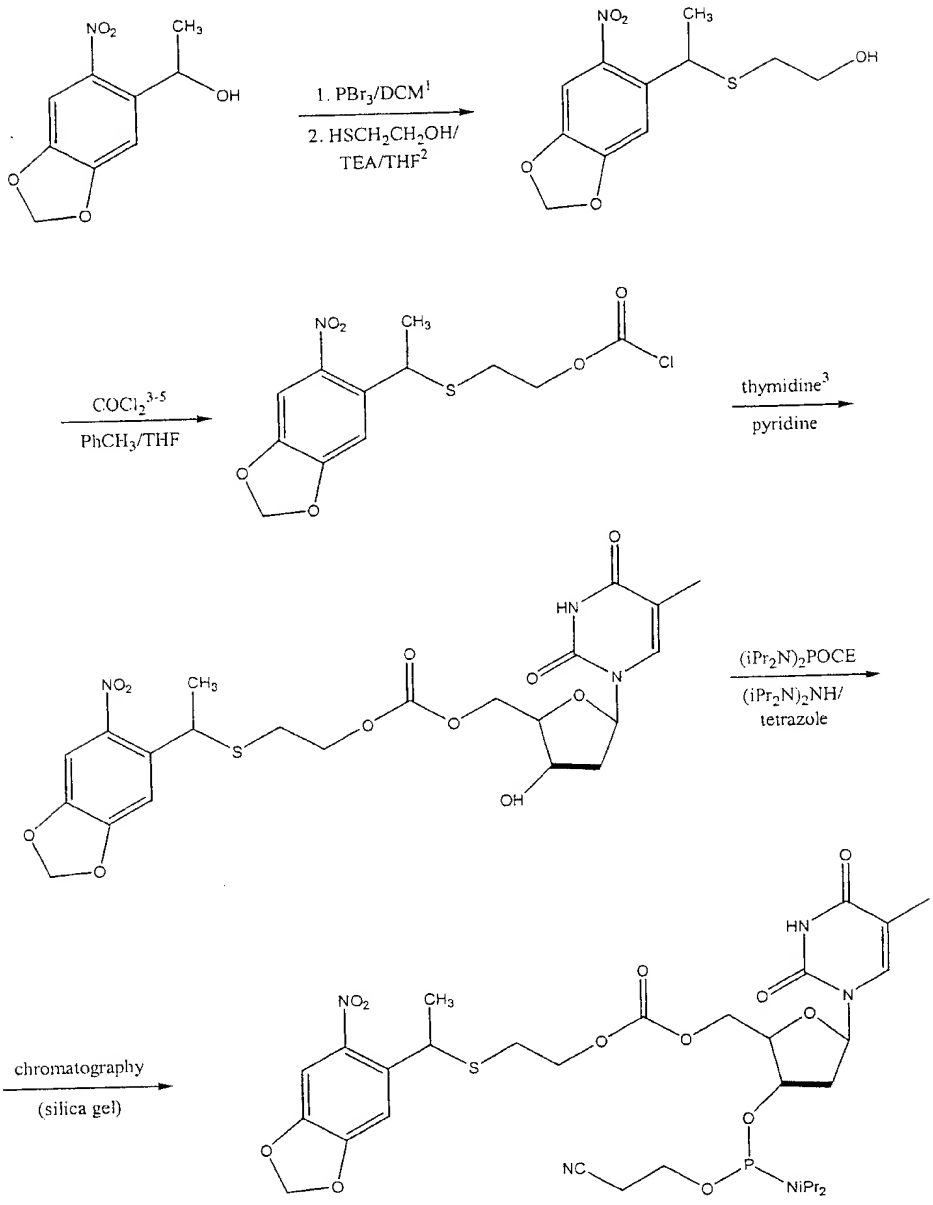


## Figure 2B
## Coupling Efficiency Data

|  | Stepwise yield | photolysis conditions |
|---|---|---|
|  (MeNPOC-control) | about 88 % | nonpolar solvent |
|  | about 85 % | MeOH |
|  | 95 % | DMSO |
|  | 94 % | Nucleophilic solvent (MeOH) |
|  | about 80 % | Nucleophilic solvent (MeOH) |
|  | about 75 % | Nucleophilic solvent (MeOH) |
|  | 90 % | basic solvent (1 % NMI/DMSO) |
|  | 96 % | DMSO |

## Figure 3

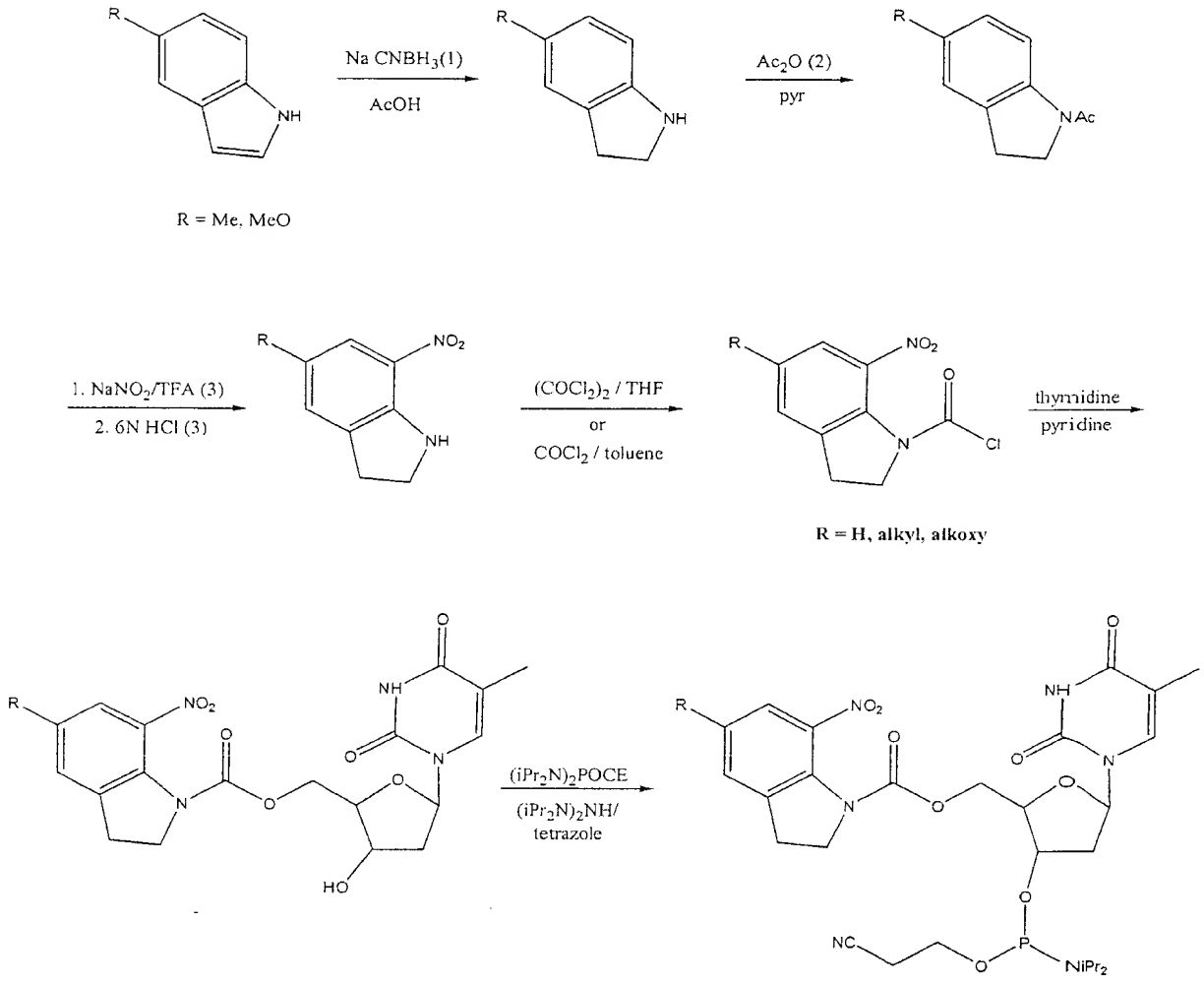
## 5'-TEMPOC-T-Phosphoramidite




1. Dyer, et al. JOC *64*: 7988 (1999)
2. Tetrahedron Lett., *38*(52): 8933-4 (1997)
3. McGall, et al. JACS *119*: 5081 (1997)
4. Triphosgene may work equally well for this step.
5. Chloroformate can probably be used without purification.

## Figure 4

## Synthesis of NINOC-T-CEP



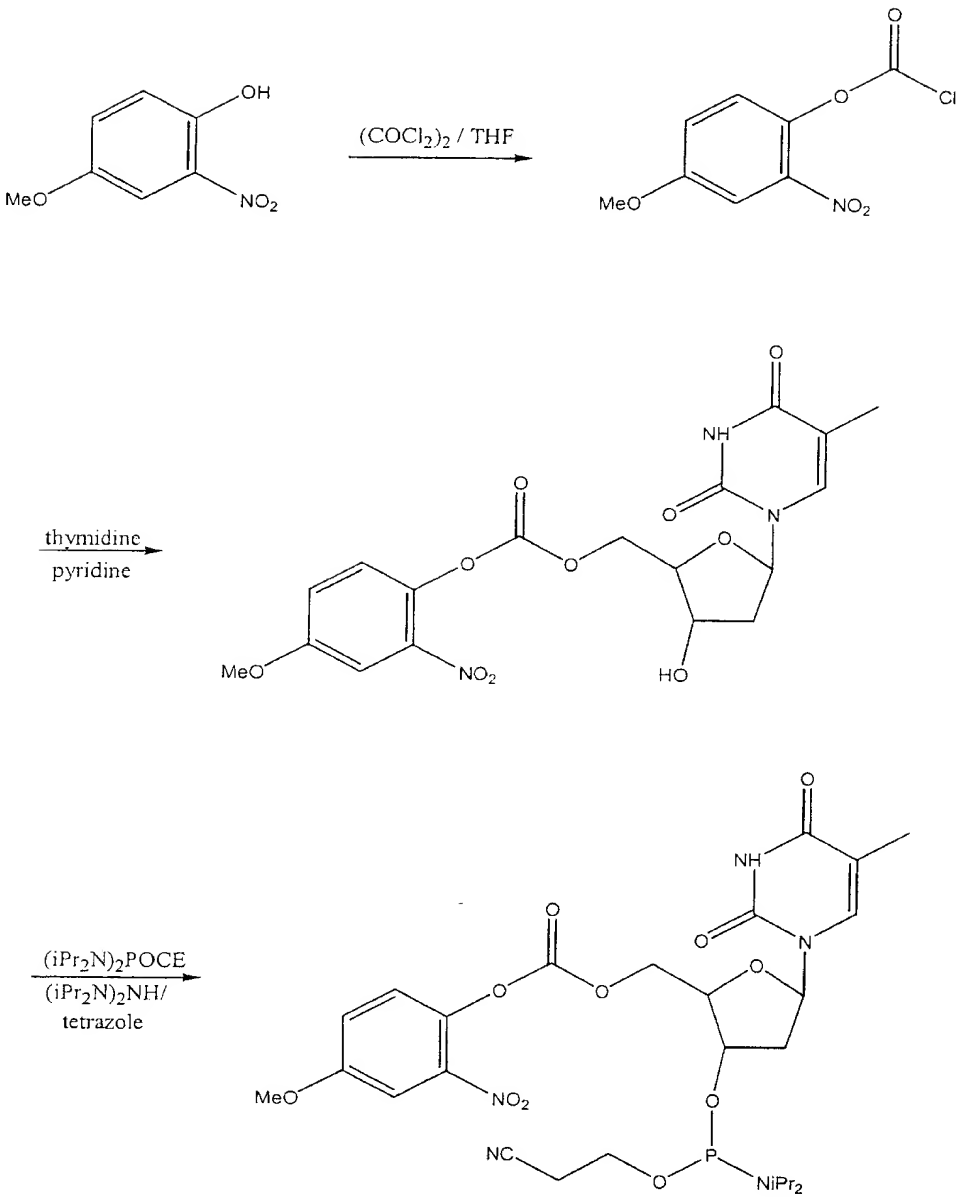

1. Bromridge, et al. (1998) *J. Med. Chem. 41*: 1598.

2. (i) Brooker, L.S., et al. (1953) *US Pat. 2,646,430*; (ii) Boekelheide, et at. (1954) *J. Org. Chem. 19*: 504.; (iii) Bennet, et al (1941) *J. Chem Soc. 74*: 244.

3. Mortensen, et al. (1996) *Org. Prep. Proc. Int. 28*: 123.

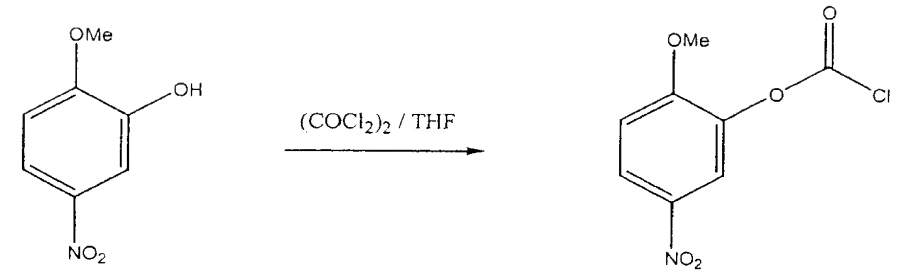
## Figure 5

## Me2NPOC-T-CEP

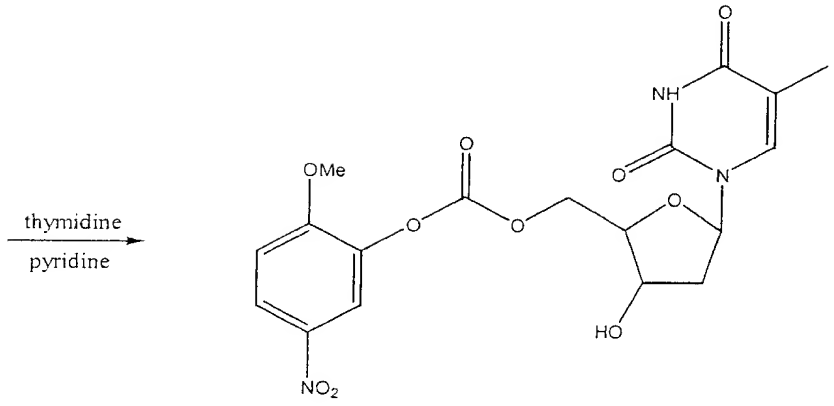


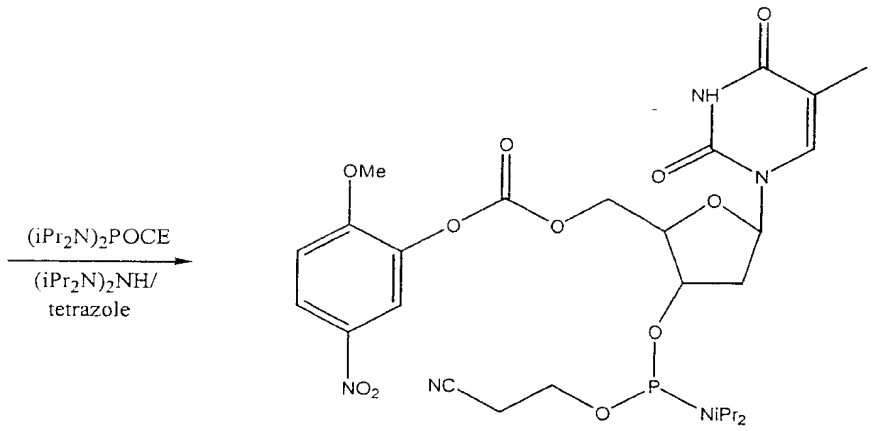
## Figure 6

## Me3NPOC-T-CEP



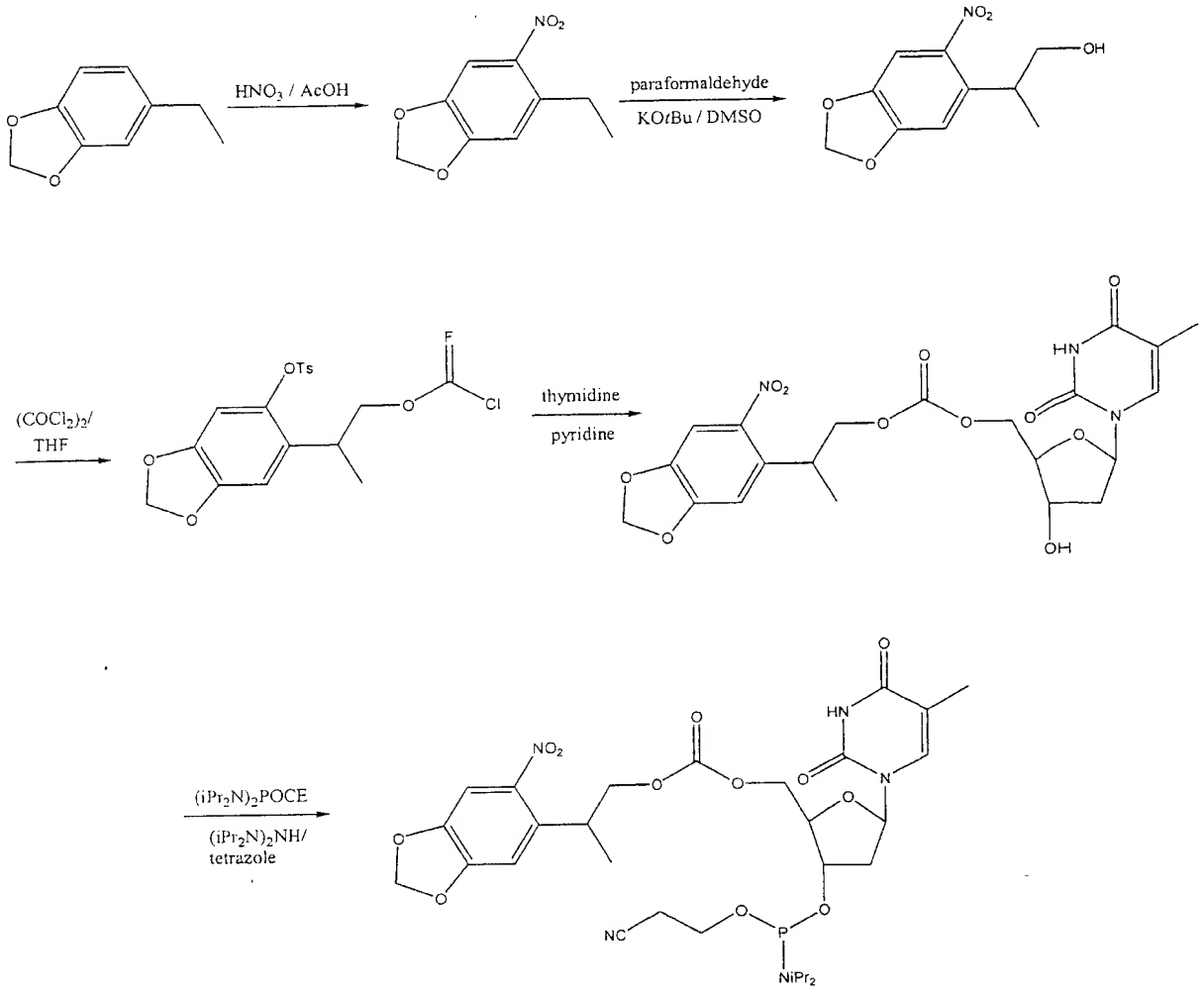

(ALH 32,927-4)



## Figure 7

## NP2POC-T-CEP



# Figure 8

## NNEOC-T-CEP